

PATENT ABSTRACTS OF JAPAN

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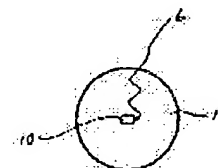
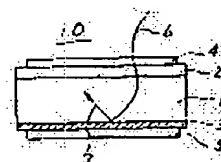
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(54) NEUTRON DETECTOR

(57)Abstract:

PURPOSE: To measure a neutron ray energy spectral image in real time by imposing a moderator around a detector formed by combining a hetero junction deposited with an amorphous semiconductor on the surface of a single crystal semiconductor and a thin boron film.

CONSTITUTION: The amorphous silicon film 2 is deposited by a plasma CVD method on the substrate surface of P type single crystal silicon. The thin boron film 3 contg. 10B at a high concn. is formed on the rear thereof by a plasma CVD method. A metal is thereafter deposited by evaporation thereon as electrodes 5, 6. A reverse bias voltage is impressed to the electrodes 5 and 6 to form a depletion layer in the single crystal silicon substrate. Neutron rays 6 come into said layer and generate 10B reaction in the film 3 thus generating α rays 7. The α rays 7 are detected as electric current pulses in the depletion layer. The detecting element 10 is covered by the modulator 11 by which the device capable of measuring the fast neutron rays is obtd. When the neutron rays 6 come in, the rays arrive at the element 10 by the locus shown in the figure with the moderator 11. The measurement of the neutron ray energy spectral image in real time is thus made possible.



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